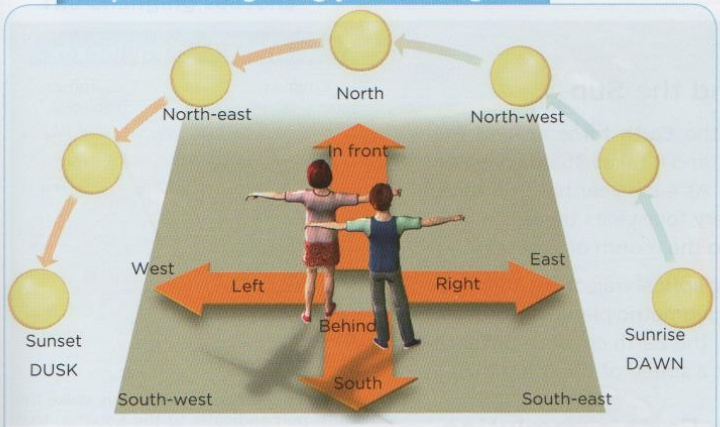
The movement of the Sun. The cardinal points and getting your bearings



The cardinal points allow us to get our bearings. To do this, we have to hold our arms out like a cross. Then we point with our right arm to the East or the place where the Sun rises in the morning.

Skills progress

Interpreting pictures

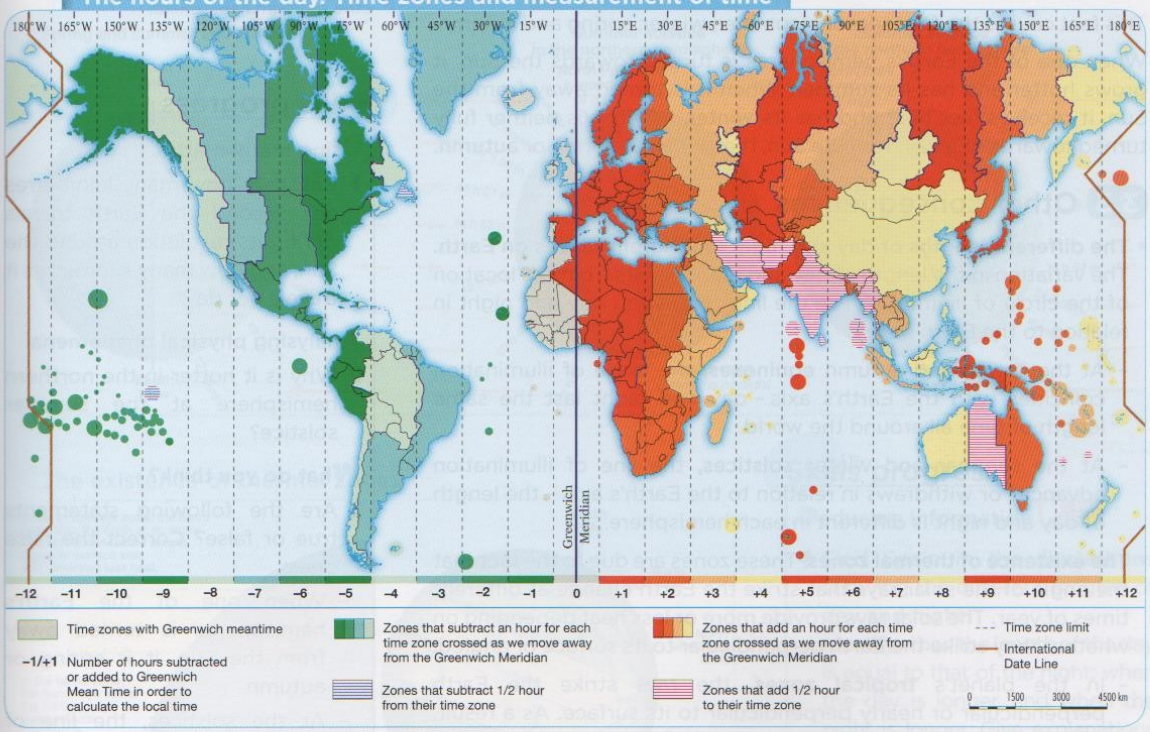
4 How would you explain to someone how night follows day by using an orange and a torch?

Getting your bearings in space

5 Why is it important to know how to find your bearings?

6 Imagine you have a friend in Japan. Do you think it would be a good idea to phone them at 4pm Spanish time? What about if they lived in New York? Explain your answers.

The hours of the day. Time zones and measurement of time



The time zones are defined by dividing the 360° of the earthly sphere into the 24 hours of the day. As a result, each time zone corresponds to 15° of the Earth's circumference and is the equivalent of one hour.

To establish the time in any one place, we use the time zone located at the 0° line of longitude, or meridian, as a reference. This line of longitude is also called the 0° Meridian or Greenwich Meridian, because it runs through a place called Greenwich, which is in the United Kingdom, to the south-east of central London. Using the Greenwich Meridian as a reference, a clock is set forward one hour for each time zone to the east, and set back one hour for each time zone to the west.

Material para el desarrollo de las competencias básicas

Nombre y apellidos: .....

Curso: ..... **Fecha:** .....

3. Vamos a seguir viajando, pero esta vez en la superficie del planeta Tierra. Resuelve el problema y completa los datos que faltan.

Salimos en avión desde Sevilla con destino a Buenos Aires el día 20 de octubre a las 12 de la mañana y el vuelo durará 10 horas. Cuando llegue a mi destino, serán las …… horas (hora local).

Estaré allí hasta el día 31, y ese día volaré a las 10 de la mañana desde Buenos Aires hasta Tenerife, en las islas Canarias. Son 9 horas de vuelo, así que llegaré a las ……, hora local.

Tres horas más tarde salgo hacia Sevilla y aterrizo en dos horas, a las …… horas.

Tengo que prestar atención al horario porque el último domingo de octubre, de madrugada, se ha producido el cambio de hora. Son, por tanto, las …… en Sevilla.

4. Al llegar a casa, encuentras en la prensa la noticia del cambio de hora. Lee este texto y haz un resumen de la noticia en 5 líneas.

«Este domingo **(31 de octubre)** se cambia de hora. Cuando sean las 3:00 de la mañana, el reloj se cambiará a las 2:00 de la mañana.

Los cambios este año son: el día **31 de octubre** (horario de invierno), cuando sean las **3:00 de la mañana** el reloj se cambiará a las **2:00 de la mañana,** y el día **27 de marzo,** cuando sean las **2:00 de la mañana,** el reloj se cambiará a las **3:00 de la mañana.** El motivo de estos cambios es el **ahorro energético**.»

.....

.....

.....

.....

.....

5. En la actividad 3 «viajabas a Buenos Aires». Seguimos en este continente. Busca en un atlas 5 ciudades de América que empiecen por la letra A y anota sus coordenadas geográficas.

CIUDADES	COORDENADAS GEOGRÁFICAS
1.	.....
2.	.....
3.	.....
4.	.....
5.	.....

– ¿Por qué todas las ciudades que has encontrado tienen longitud Oeste?

.....

4 Representing the Earth's area

www.anayaeducacion.es

4.1 Maps and their elements

Geographers represent geographical space by using maps.

A map is a simplified representation of the Earth's spherical surface, or a part of it, depicted on a flat surface. To make maps, cartographers use a geographic grid, which is a system of projection. They also use a scale and a range of standard signs.

4.2 The geographic grid

To locate any point of the Earth's surface on a map, we need to use a **geographic grid.** In other words, we need to use a system of coordinates made up of two types of imaginary lines: lines of latitude (parallels) and lines of longitude (meridians).

- The **parallels** (lines of latitude) are circles that run perpendicular to the axis of the Earth's rotation. The main or 0° line of latitude is the equator, which divides the Earth into two halves or hemispheres, north and south. Other important lines of latitude are the tropics of Cancer and Capricorn as well as the Arctic and Antarctic polar circles.
- The **meridians** (lines of longitude) are semicircles that run from one pole to the other. The prime meridian, or 0° line of longitude, is the one that runs through Greenwich, near London.

  Using this geographic grid, it is possible to locate any point on a map by calculating its latitude and its longitude. These are measured in degrees.
- The **latitude** is the distance of any one point on the Earth from the Equator. It can be north or south.
- The **longitude** is the distance from any one point on the Earth to the 0° line of latitude, or the prime (Greenwich) meridian. It can be east or west.

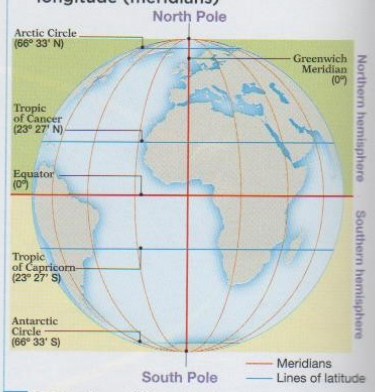
4.3 The system of projection, scale and standard signs

To create a map, it is also necessary to use three types of tools: a system of projection, a scale and a set of standard signs.

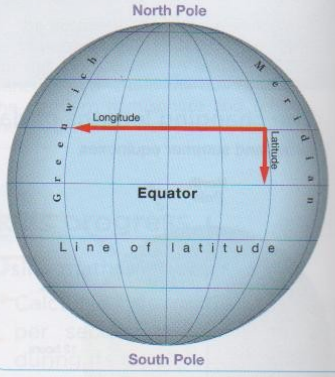
- A **system of projection** is a method that enables the Earth's spherical surface to be represented on a flat surface. The grid of lines of latitude and longitude are transferred to a flat surface (plane projection) or to a surface that can be developed on a flat surface, such as a cylinder (cylindrical projection) or a cone (conic projection).
- A **scale** is the relationship between a distance measured on the map and the corresponding distance on Earth itself. The most common scales are graphic and numerical.
- The sets of **standard signs** used in maps combine colours, signs or symbols. They are used to represent reality in a simplified visual form. Their meaning is explained by a map's legend or key.

The geographic grid

Lines of latitude (parallels) and longitude (meridians)



Latitude and longitude



FOCUS on English

Do not confuse **Greenwich** in London with **Greenwich Village,** a neighbourhood on the west side of Lower Manhattan, New York City, well-known as a place for alternative theatrical, artistic and musical movements and progressive ideas since the 19th century.

Skills progress

Interpreting cartographic language

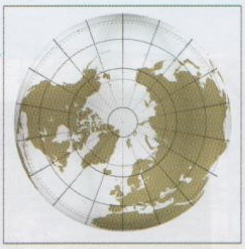
1 What are the fundamental lines of latitude or parallels and what is their latitude?

2 Which line of longitude or meridian is represented in the images above?

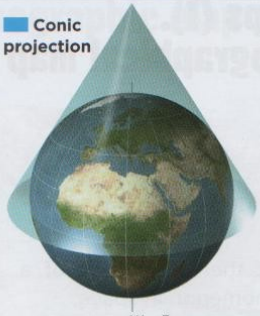
Recognising the elements of a map

Systems of projection

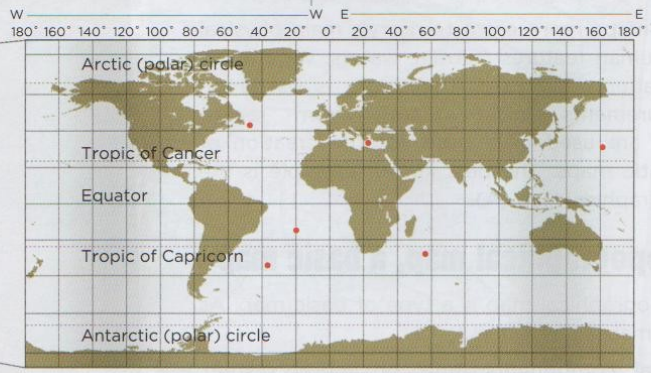
Azimuthal or plane projection



Conic projection



Cylindrical projection



Types of scale

Graphic scale

This consists of a straight line divided into segments. Along the length of the line the real distance is given as the equivalent to the graphic scale, or each of its parts. This enables us to make direct conversions.

Numerical scale

Scale 1 : 6 750 000

The numerical scale indicates the relationship between the units used to make the map and the reality the map represents. For example, the 1:6 750 000 scale indicates that 1 cm measured on the map is equivalent to 6 750 000 real centimetres, or in other words 67.5 km.

The legend

Road network

- Motorways
- Motorways under construction
- Main road
- Main road under construction

Airports

- International
- Domestic
- Aerodromes

Skills progress

Understanding information

3 Use the text above to answer the following questions:

a) What elements are needed to make a map?

b) What are the lines of latitude and longitude used for?

c) Why do you think the combination of lines of latitude and longitude are called a geographic grid?

Working with maps

4 Using the maps for this unit on the Anaya website:

a) Calculate the latitude and longitude of Lisbon, Moscow, Chicago and Brasilia.

b) Identify which system of projection has been used to create the political map of Africa.

5 Study the map that accompanies the cylindrical projection:

- What is the principal line of latitude and line longitude it represents?
- Calculate the latitude and longitude of the points marked in red on the map. Identify what cities correspond to these red points by looking at the atlas at the end of the Student's Book.

Techniques

Working with maps (I). The National Topographical Map

Types of map

Maps are traditionally divided into two major groups: thematic and basic.

- **Thematic maps** represent the distribution of a specific geographical phenomenon in space,
- **Basic maps** represent a territory's main physical and human features (terrain, waters, vegetation, population, land use). Their data is based on measurements taken directly from reality, which are used as a basis for the creation of thematic maps. The best known example is the Topographical Map (A).

The topographical map, a basic map

The topographical map is a type of basic map. As with all maps, it includes:

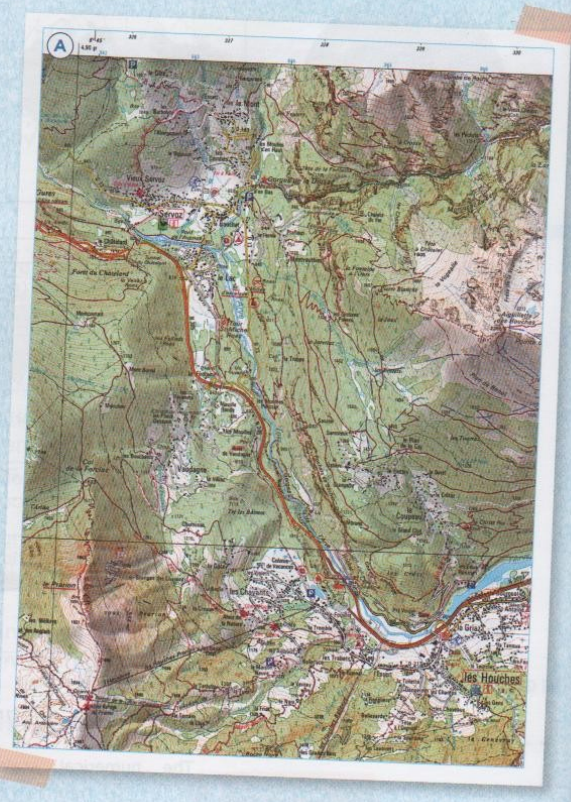
- **General components**: title, projection system, scale, legend explaining the signs and symbols used, and finally the toponomy or names of places represented.
- **Simplified representations** of the main physical and human elements. Those relating to the physical environment include the terrain, represented with contour lines (B); the waters, marked in blue; and vegetation shown using a variety of symbols. With regard to the human features these include population and land use (agriculture, industry, facilities, transport routes), administrative boundaries, etc.

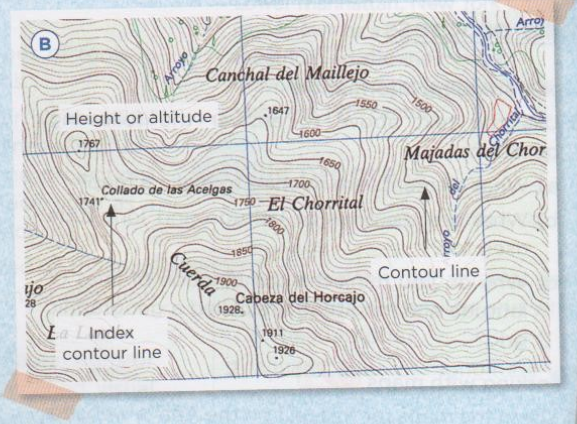
Contour lines

In topographical maps the terrain's altitude is represented with contour lines (B); these are lines that link all the points located at the same altitude.

There are two **basic types** of contour line.

- **Index contour lines** are thicker and included every five contour lines. Their height is indicated with a number.
- The **secondary** or normal contour lines are thinner and they are marked between the index contour lines. Their height is not given.





Techniques

Working with maps (II). Thematic maps, physical maps and topographic profiles

Thematic maps and their types

Thematic maps represent a specific geographical phenomenon (relief, population, agriculture, etc.) using colours, lines, arrows, geometric figures and symbols. They are created using the data provided by basic maps, although today modern technology can be used to create maps, for example with the use of specific programmes, such as Google maps.

Thematic maps can be qualitative or quantitative.

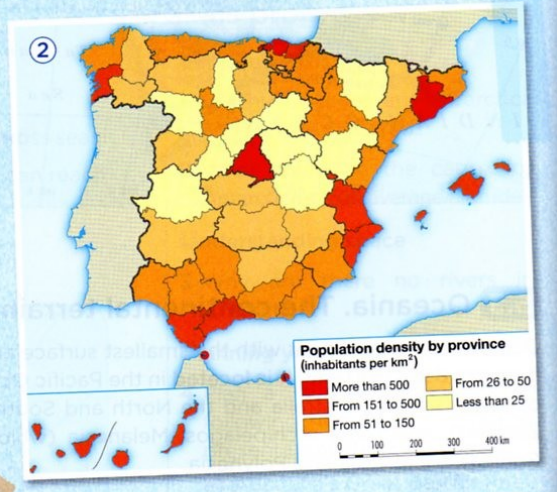
- **Qualitative maps** represent the spatial distribution of a phenomenon without making reference to the quantity or density represented **(1)**.
- **Quantitative maps** express the spatial distribution of a phenomenon by referring to its quantity. To do so they use a range of systems: lines that link points of the same value; colours graded according to quantity; geometric figures or arrows whose size is proportional to the value they represent, etc. **(2)**.

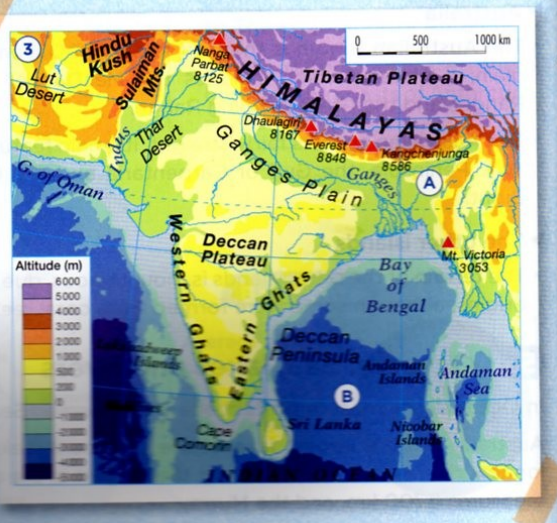
The physical map, an example of a thematic map

Physical maps **(3)** are those that represent the topography of an area (terrain, mountain ranges, etc.) and waters.

In order to read them, we need to understand the data they contain. That is, the general components and specific conventions used.

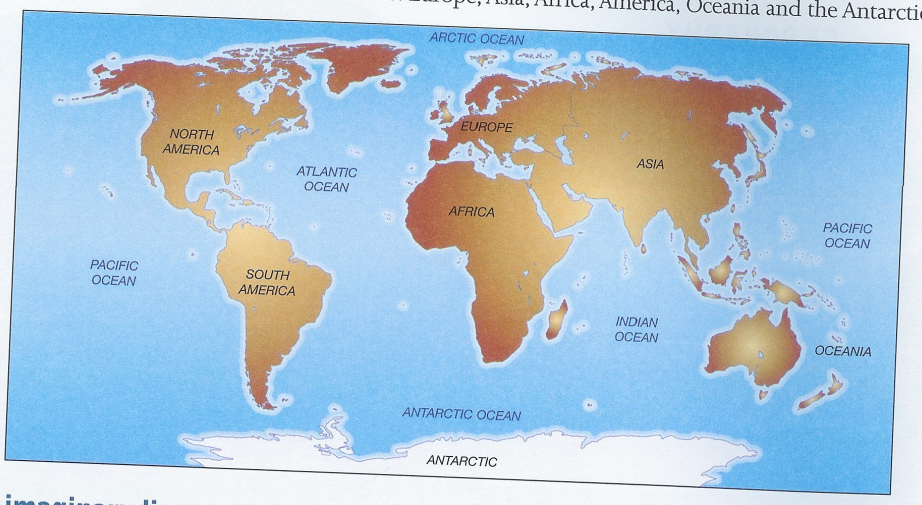
- The **general components** are the geographic grid, which enables the coordinates and position of any place to be calculated; the projection system; the scale; and the conventional signs that simplify what is being represented, the meaning of which is explained in the legend or key of the map.
- The **conventions** refer to the altitude of the terrain altitude and the depth of the waters.
- The **altitude** of a terrain is represented using internationally established colours and they indicate the basic forms of the terrain.





Continents and oceans

Our planet has five oceans: the Atlantic Ocean, the Pacific Ocean, the Indian Ocean, the Arctic Ocean and the Antarctic Ocean. There are also six continents: Europe, Asia, Africa, America, Oceania and the Antarctic.

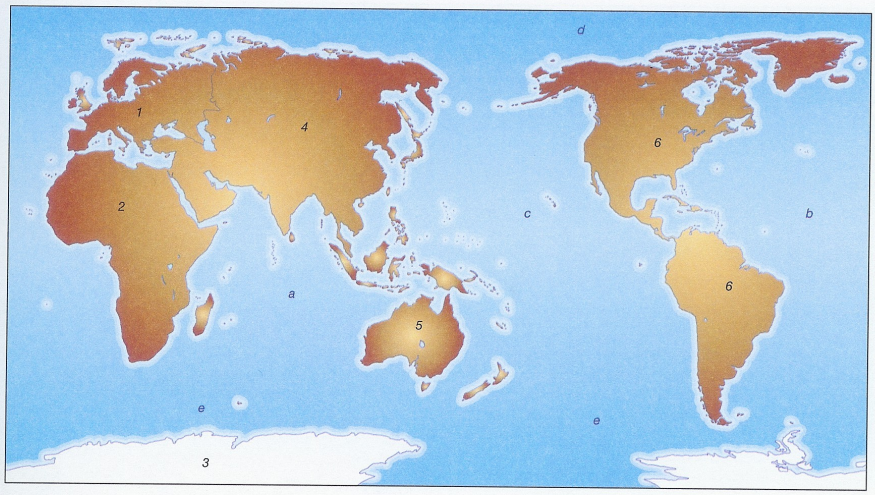


The imaginary lines

When we talk about the surface of the Earth we use imaginary lines: **parallels** and **meridians.** The 0 parallel is the Equator, which divides the Earth into two equal parts: the Northern and Southern hemispheres. The remaining parallels circle the Earth and are parallel to the Equator. These include the **polar circles** and the **tropics.** A meridian is a semi-circle which runs from one pole to the other. The Greenwich meridian is the 0, or prime, meridian.

Any point on the surface of the Earth can be located precisely by giving its coordinates, in the form of **latitude** and **longitude.** Latitude is the distance between a parallel and the Equator and longitude is the distance between a meridian and the Greenwich meridian. These distances are measured in degrees (°), minutes (') and seconds ("). For example, the polar circles are located at 66°33' from the Equator and the tropics, at 23°27'.

Activity 1. Look at the map and write the name of the continents and the oceans.



Continents

1 _____
2 _____
3 _____
4 _____
5 _____
6 _____

Oceans

a _____
b _____
c _____
d _____
e _____

Activity 2. Identify the imaginary lines.

tropic of Cancer • tropic of Capricorn • Arctic polar circle • Antarctic polar circle • the Equator • the Greenwich meridian • a meridian • a parallel

1 _____ 5 _____
2 _____ 6 _____
3 _____ 7 _____
4 _____ 8 _____

Activity 3. Look at the map on page 4 and complete the tables.

1 Give the coordinates for the towns in the table.

Towns	Latitude	Longitude
London		
New York		
Cairo		
Lima		

2 Say which towns correspond to the coordinates on the table.

Towns	Latitude	Longitude
1	60° N	12° E
2	2° S	36° E
3	28° N	77° E
4	18° N	73° W

WWW 3 **Put the following towns on the map.**

Santiago • Bamako • Kigali • Sydney

RECURSOS COMPLEMENTARIOS EN INTERNET:

- Página de acceso a diversas web didácticas sobre los contenidos de esta unidad: http://www.geohistoria.net/paginas/1eso1.htm

- Página con actividades fáciles para descargar relativas al planeta Tierra: http://roble.pntic.mec.es/~lferna4/secundaria/anaya/1geografia/1secanageo.htm

- Los movimientos de la Tierra (con actividades): http://almez.pntic.mec.es/~jmac0005/ESO_Geo/TIERRA/Html/movimientos.htm

- Cómo se producen las estaciones: http://www.tayabeixo.org/que_obs/cambios.htm

- La representación de la Tierra. Con actividades: http://almez.pntic.mec.es/~jmac0005/ESO_Geo/TIERRA/Html/Representacion.htm

FILMOGRAFÍA:

Tierra, la película de nuestro planeta (Earth). Alastair Fothergill, Mark Linfield. Gran Bretaña-Alemania, 2007. **** TP. Sinopsis: Preciosa muestra de cine documental realizado con absoluta perfección técnica. Muestra, a través de la peripecia de diversas especies en su lucha por la supervivencia, toda la belleza y la fragilidad que tiene el asombroso planeta que habitamos. Aúna perfectamente el rigor y el interés científico del tema con momentos de incontenible emoción.

La vuelta al mundo en 80 días (Around the world in 80 days). Michael Anderson. EEUU, 1956. *** TP. Sinopsis: Basada en la novela de Jules Verne, la película narra el fabuloso viaje de Phileas Fogg alrededor del mundo, en pleno siglo xix , en el «asombroso» tiempo de menos de tres meses. En este periplo, inimaginable para la época en la que está datada la novela, podemos conocer varios países de la mano de las aventuras que corren sus protagonistas.

Tierra, la película de nuestro planeta (Earth). Alastair Fothergill, Mark Linfield. Gran Bretaña-Alemania, 2007. **** TP. Sinopsis: Impresionante documental realizado con todos los avances técnicos, puestos al servicio del cine, para ofrecer una visión de nuestro planeta sorprendente y emocionante, tanto desde una perspectiva física como biológica. Asimismo supone un aviso sobre la preocupante acción del ser humano que pone en peligro el equilibrio de nuestro planeta.

El explorador perdido (Stanley and Livingstone). Henry King. Estados Unidos, 1939. **** SC. Sinopsis: Inolvidable filme clásico que narra la extraordinaria aventura del doctor David Livingstone, explorador del continente africano, y descubridor de, entre otras maravillas, las cataratas Victoria. Tras la desaparición del doctor David Livingstone durante un largo período de tiempo, un periódico norteamericano encarga al reportero Henry M. Stanley seguir las huellas del misionero y médico escocés. La incansable búsqueda del periodista supone otra extraordinaria hazaña.

La vida secreta de Walter Mitty (The Secret Life of Walter Mitty). Ben Stiller. Estados Unidos, 2013. *** NR-7. Sinopsis: Remake del clásico de 1947 acerca de la vida de un aburrido y gris empleado de una revista cuyo trabajo consiste en archivar y custodiar los negativos fotográficos. Cuando el director le pide el negativo del que va salir la portada de la próxima edición este no aparece por ningún lado, Walter decide abandonar

su monótona existencia y lanzarse a través de diversos países del mundo en busca del fotógrafo, autor de la instantánea. Su tesón y sentido
del deber cambiarán su forma de ser.

BIBLIOGRAFÍA:

Vecchione , Glen : **Experimentos sencillos sobre el cielo y la tierra.** Oniro, 2002.
Plantea experimentos sencillos, que se pueden realizar con materiales fáciles de conseguir, para calcular la circunferencia de la Tierra, construir un reloj de sol o trazar la cartografía del fondo oceánico.

Defoe , Daniel : **Aventuras del capitán Singleton.** Anaya, 1996.
Bob Singleton fue raptado de pequeño y se hizo a la mar en condiciones de semiesclavitud
hasta que se convirtió en pirata y se dedicó a recorrer mares e islas por todo el mundo.

Hawking, Lucy, y Hawking, Stephen: **El origen del Universo**, Montena, 2012.
Relato, protagonizado por dos niños, que nos abren las puertas al apasionante origen del universo, las estrellas, los agujeros negros o nuestro planeta. Las imágenes incluidas favorecen
la comprensión de estos elementos del cosmos.

Scott, Carole: **Espacio. Estrella, planetas, naves... un viaje a todo gas por el universo,** SM, 2008.
Incluye desde el big bang al universo actual, desde las galaxias a los planetas o los agujeros
negros. Un viaje por el cosmos.

Rosenvaser Feher, Elsa: **Cielito lindo: astronomía a simple vista**, Siglo xxi, 2004.
Esta físico-matemática argentina muestra cómo mirar el cielo de una forma diferente, de manera que nos permita interpretar algunas de las cosas que se observan a simple vista: el aparente movimiento del Sol, el desplazamiento de la Luna, sus fases, los eclipses, las estrellas... Junto a las explicaciones pertinentes, tanto actuales como históricas (Ptolomeo, Aristóteles, Galileo...), ofrece la posibilidad de realizar pequeños experimentos que nos acercan a la explicación de estos fenómenos visibles. Más que para leer cada alumno o alumna es un libro para compartir lectura y prácticas entre estudiantes y profesorado.

EVALUACIÓN Y AUTOEVALUACIÓN. 1º ESO BILINGÜE. SECUENCIA 1. ALUMNO/A:

Sobre las sensaciones y el grado de satisfacción con la secuencia realizada:

¿te ha interesado lo que hemos visto?

¿te ha gustado la manera en que hemos abordado el tema?

¿estás satisfecho/a con el trabajo que has realizado?

¿Crees que has aprendido cosas nuevas? ¿cuáles?

Sobre el grado de satisfacción con la tarea realizada en grupo. Puntuar de 1 a 4.

Grado de satisfacción con el proceso de trabajo	
Grado de satisfacción en el resultado final	
Grado de compromiso y cumplimiento en el proceso de trabajo de mis compañero/as	

Sobre los contenidos didácticos

CONOZCO O SE HACER	SI	NO	¿?
Las condiciones que hacen posible la vida en la tierra.			
Los movimientos de la tierra y sus consecuencias			
Nuevo vocabulario sobre la tierra y los mapas en inglés.			
Localizar un punto cualquiera en un mapa si sé sus coordenadas			
Saber qué hora es en cualquier punto del planeta			
Descargarme este documento			

¿Tienes algo que añadir?

Calificaciones (a rellenar por el profesor)		
Criterio ponderado	**Calificación**	**Total**
Tarea 1		
Tarea 2 (colectiva)		
Tarea 2 (individual)		
Actitud		